

The manuscript titled “Process Analysis of Elevated Concentrations of Organic Acids at Whiteface Mountain, New York” by Lawrence et al. investigates the potential role of aqueous chemistry on organic acids using a combination of modeling and observations from Whiteface Mountain. The paper has potential to increase understanding on organic acid formation, however, there are a few concerns that should be addressed prior to publication.

General Comments

The manuscript lacks a clear explanation regarding the impacts of its results and how it advances knowledge. In the abstract and introduction, there is discussion of the uncertainties associated with organic acids including how organic acids are commonly not included in detail in models and that few studies on organic acids in the Northeast U.S. exist. The manuscript then states “To address these shortcomings, this study investigates...”. How are these shortcomings addressed with the results of this study? This is not clearly explained or highlighted since the conclusions seem to just restate the motivation of the study – there are uncertainties in organic acid production and further modeling and observational studies are needed. While future work can still be needed, it is important to address the significance of the results of this study that was performed and in what particular aspects it furthers current knowledge.

The manuscript tends to use qualitative descriptive language and would benefit from more quantitative evaluations. For example, throughout the manuscript there are statements of “good model agreement”, “significant reductions”, “stronger production”, “very little change”, “substantially underestimated”, “little correlation”. How are these terms defined? What quantitative values do they represent? A statement such as “reduced by 80%” or “reduced with statistical significance by t-test” is more informative and stronger than “significant reductions”. More quantitative results may also help in addressing the above concern.

Specific/Technical Comments

Line 7: remove “analysis”.

Line 89: “form” should be “from”.

Line 251: Remove space before period.

Line 251: Add space after “trajectories”.

Line 258: Add period at end of sentence.

Line 331-332: Remove “(left)” and “(right)”. This is appropriate for the figure caption and seems unnecessary in the main body text.

Line 340: What do these hour numbers represent? Please clarify.

Figure 1: Please make font size larger. Even with zooming in, some words are too small to be legible.

Figure 5: The caption references a) and b) but the images are not labeled as such.

Figures 7 & 8: In the caption, “Plum” should be “Plume”.

Figure 9: What does the blue solid line represent?

Supplement: Section S3 comes before S2? Line 152 references Section S3 for WRF Chem description but it is listed as S2 in the supplement. “Figures S8” under Section S6 should be Figure S7. In Section S7, “Figure S9” should be Figure S8.